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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,390	05/02/2001	Ming C. Hao	10003407-1	6484

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EXAMINER
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ART UNIT	PAPER NUMBER
2177	4

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary	Application No. 09/847,390	Applicant(s) HAO ET AL.
	Examiner Srirama Channavajjala	Art Unit 2177

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 May 2001</u> .

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) ☐ Other:

DETAILED ACTION

Drawings

1.   The drawings filed on 5/2/2001 are <u>objected</u> to by the Draftsperson under

37 CFR 1.84 or 1.152.

Information Disclosure Statement

2.   In the specification, at page 4, 12,16, applicant cited number of references,

applicant is hereby required to submit PTO-1449 in response to this office action, paper

no. # 4.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

3.   Claims 1-14,16,19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Gunjan K Gupta et al., [hereafter Gupta], Detecting seasonal trends and cluster

motion visualization for very high dimensional transactional data, proceedings of first

international SIAM conference on Data Mining (SDM01), April, 2001, pp 1-18, in view of

Agrawal et al., [hereafter Agrawal], US Patent No. 5794209.

4.   As to Claim 1, 11, 13, Gupta teaches a system which including 'visualizing

information' [see Abstract], 'receiving information having plurality of items' [page 2, line

33-36], plurality of items corresponds to data set having 10,000 or more products as

detailed in page 2, line 33-35, 'generating a graph of the items by arranging the items

on a spherical surface to specify an initial position of each item' [page 11, item 5.2,

fig 4a-4b], Gupta specifically directed to generating three dimensional graph with

respect to data clusters as detailed in fig 4a-4b, 'constructing a frequency matrix for

defining a stiffness measure of a spring attached to each pair of items' [page 11,

item 5.2, page 13, line 1-14], 'relaxing the graph, wherein after relaxation the graph

converges to a state of local minimal energy, wherein the distance between a pair of

items represents the frequency of the item set in the transaction data' [page 14, fig 7-8],

'association directions between the items in the transaction data' [page 10, line 5-36].

It is however, noted that Gupta does not specifically teach' employing a directed edge to

represent the association confidence levels'. On the other hand, Agrawal disclosed

'employing a directed edge to represent the association confidence levels' [col 3,

line 53-62], Agrawal specifically directed to user-defined minimum support confidence

level with respect to large item sets and subsets as detailed in col 3, line 53-62.

It would have been obvious to one of the ordinary skill in the art at the time of

applicant's invention to incorporate Agrawal et al., into detecting seasonal trends and

cluster motion visualization for very high dimensional transactional data of Gupta et al.,

because both are directed to knowledge discovery with respect to user or customer

transactions or purchasing, more specifically Gupta is directed to transactional data

particularly e-commerce business data presented in a visualization schemes

[see Abstract], while Agrawal et al., is directed to quickly mining association rules in

databases, more specifically, discovering consumer purchasing tendencies that

specifically identifies customer transaction item sets that are stored in a database

[see Abstract]. One of the ordinary skill in the art the time of applicant's invention to

combine the references because that would have allowed uses of Gupta to implement

computer program product that selects specific subsets of itemsets and satisfies the

minimum confidence criteria defined by the user, further satisfies rules associated the

discovering trends between item set recurrence at least equals user-defined confidence

as suggested by Agrawal et al., [see Abstract, col 3, line 45-62], thus improving

accuracy and performance of data analysis.

5.   As to claim 2, 14, Agrawal disclosed 'generating a confidence matrix for defining

the confidence level of each association' [col 4, line 15-25].

6.   As to Claim 3, Agrawal disclosed 'receiving a user-defined minimum confidence

level' [col 3, line 54-62], 'displaying items having an association with a confidence level

that is in a predetermined relationship with the user-defined minimum confidence level'

[fig 2, col 6, line 5-18].

7.   As to Claim 4, Agrawal disclosed 'receiving a plurality of items' [col 6, line 6-7],

'receiving internet transaction data' [col 5, line 48-51, line 53-61], 'transactions,

products, transactions' [col 7, line 25-40].

8.   As to Claim 5, 12, Agrawal disclosed 'plurality of transactions, where each

transaction includes one or more items' [col 7, line 41-45]. On the other hand, Gupta

disclosed 'generating a graph of the items by arranging the items on a spherical surface

to specify an initial position of each item, organizing the itmes based on how frequently

the items appear in transactions' [page 8, item 4.2], 'specifying the initial position of

each item in one of a random fashion and a predetermined fashion' [page 10, line 5-37].

9.   As to Claim 6, the limitation of this claim have been noted in the rejection of

above claim 5. In addition, Gupta disclosed 'distributing the items equally on a spherical

surface, wherein tightness is a sum of all supports from a current item to directly

adjacent items, and wherein more tightly related items are disposed in the center of the

sphere and the less tightly related items are evenly distributed around the center' [page

11, item 5.2, fig 4a-4b].

10.   As to Claim 7, the limitation of this claim have been noted in the rejection of

above claim 6. In addition, Gupta and Agrawal both teach statistical analysis of large

data sets [see Gupta: Abstract; Agrawal: Abstract], Gupta also teaches 'distributing the

items equally on a spherical surface [see fig 4a-4b]. It is however noted that sampling

of data sets are integral part of both Gupta and Agrawal's teaching because they are

directed to sampling of data sets. It is noted that sampling is based on stochastic

sampling, more specifically based on Poisson distribution is common knowledge in the

art, further Poisson disc sampling is based on Poisson distribution with minimum-

distance constraint between samples either added or removed points at random to any

previous points.

11.   As to Claim 8, Gupta disclosed 'frequency matrix includes a plurality of elements,

wherein each element includes the frequency of occurrence of the association in all

transactions after normalization' [fig 4, page 11, item 5.2], Gupta specifically directed to

position matrix that specifically indicate at least trends discovered using visualization.

12.   As to Claim 9-10, the limitation of this claim has been noted in the above claim 8.

In addition, Gupta disclosed 'three-dimensional sphere wherein the distance between

each pair of items represents the support therebetween' [see fig 4].

13.   As to Claim 16, Gupta disclosed 'market basket analysis application'

[see Abstract].

14.   As to Claim 19-20, Agrawal disclosed 'text mining application' [see Abstract,

fig 1]

15.   Claims 15,17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gunjan K Gupta et al., [hereafter Gupta], Detecting seasonal trends and cluster motion

visualization for very high dimensional transactional data, proceedings of first

international SIAM conference on Data Mining (SDM01), April, 2001, pp 1-18, Agrawal

et al., [hereafter Agrawal], US Patent No. 5794209 as applied to Claim 1,11 above,

further in view of Ratnavale et al., [hereafter Ratnavale], WO 01/08072A1

16.   As to Claim15, Gupta disclosed 'visually associate product affinities and

relationships' [see fig 4-6], while Agrawal teaches large itemsets related to transaction

data [see Abstract], however, it is noted that both Gupta and Agrawal do not specifically

teach 'electronic commerce web site, products for sale'. On the other hand Ratnavale

disclosed 'electronic commerce web site, products for sale' [see Abstract, fig 6-7].

It would have been obvious to one of the ordinary skill in the art at the time of

applicant's invention to incorporate teaching of Ratnavale into detecting seasonal trends

and cluster motion visualization for very high dimensional transactional data of

Gupta et al., and quicly mining association rules in databases of Agrawal et al., because

that would have allowed users of Gupta,Agrawal to access interactive market system

via world wide web or internet based product sales and services of Ratnavale [see

Abstract, fig 1], further bringing the advantages of multiple buyers, vendors to customize

the market to meet their individual needs in real-time via Internet as suggested by

Ratnavale [page 3, line 12-16].

17.   As to Claim 17-18, Ratnavale disclosed 'telecommunications , network traffic

analysis application [page 7, line 20-28, fig 1].

18.   Claims 1,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gunjan K Gupta et al., [hereafter Gupta], Detecting seasonal trends and cluster motion

visualization for very high dimensional transactional data, proceedings of first

international SIAM conference on Data Mining (SDM01), April, 2001, pp 1-18, in view of

Mohammed Javeed Zaki et al., [hereafter Zaki], Evaluation of sampling for data mining

of association rules, 7th Wkshp.Resrch.Iss.Data Engg, 1996, pp1-9

19.   As to Claim 1, 11, Gupta teaches a system which including 'visualizing

information' [see Abstract], 'receiving information having plurality of items' [page 2,

line 33-36], plurality of items corresponds to data set having 10,000 or more products as

detailed in page 2, line 33-35, 'generating a graph of the items by arranging the items

on a spherical surface to specify an initial position of each item' [page 11, item 5.2,

fig 4a-4b], Gupta specifically directed to generating three dimensional graph with

respect to data clusters as detailed in fig 4a-4b, 'constructing a frequency matrix for

defining a stiffness measure of a spring attached to each pair of items' [page 11, item

5.2, page 13, line 1-14], 'relaxing the graph, wherein after relaxation the graph

converges to a state of local minimal energy, wherein the distance between a pair of

items represents the frequency of the item set in the transaction data' [page 14, fig 7-8],

'association directions between the items in the transaction data' [page 10, line 5-36].

It is however, noted that Gupta does not specifically teach' employing a directed edge to

represent the association confidence levels'. On the other hand, Zaki disclosed

'employing a directed edge to represent the association confidence levels' [page 6,

col 1, item 4.4, col 2, fig 5].

It would have been obvious to one of the ordinary skill in the art at the time of

applicant's invention to incorporate Zaki et al., into detecting seasonal trends and

cluster motion visualization for very high dimensional transactional data of Gupta et al.,

because both are directed to data analysis, more specifically Gupta is directed to

transactional data particularly e-commerce business data presented in a visualization

schemes [see Abstract], while Zaki et al., is directed to Evaluation of sampling for data mining of association rules, more specifically, sampling, analyzing large volumes of transactional business data using association rules [see Abstract]. One of the ordinary skill in the art the time of applicant's invention to combine the references because that would have allowed uses of Gupta to effectively sampling the various transactional related data, more specifically sampling item set size and large item sets for stabling accuracy measurements, further establishing confidence levels between various sampling data sets as suggested by Zaki et al., [see page 2, col 2, sampling algorithm, fig 2, page 6, col 1, item 4.4], thus improving accuracy and performance of data analysis.

Conclusion

The prior art made of record

a.   Gunjan K Gupta et al., Detecting seasonal trends and cluster motion visualization for very high dimensional transactional data, proceedings of first international SIAM conference on Data Mining (SDM01), April, 2001, pp 1-18

b.   Mohammed Javeed Zaki et al., Evaluation of sampling for data mining of association rules, 7th Wkshp.Resrch.Iss.Data Engg, 1996, pp1-9

c.   US Patent No.   5794209

d.   WO 01/08072A1

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

e.   US Patent No.   6141006

f.   US Patent No.   6225998

g.   US Patent No.   6157705

h.   US Patent No.   6292784

i.   US Patent No.   6334110

j.   US Patent No.   2002/0087679

k.   WO 01/80098

l.   EP0610581A2

m.   EP1077413A2

n.   Paulo B et al., Mining web access logs of an On-line

newspaper, pp1-8

o.   Mihael A, Visual data mining with Pixel-oriented

visualization techniques, pp1-8

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Srirama Channavajjala whose telephone number is

(703) 308-8538.   The examiner can normally be reached on Monday-Friday from

8:00 AM to 5:30 PM Eastern Time. The TC2100's Customer Service number is

(703)306-5631.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John E. Breene, can be reached on (703) 305-9790. The fax phone

numbers for the organization where the application or proceeding is assigned are as

follows:

703/746-7238   **(After Final Communication)**

703/746-7239   **(Offical Communications)**

703/746-7240   **(For Status inquiries, draft communication)**

Any inquiry of general nature or relating to the status of this application or

proceeding should be directed to the Group receptionist whose telephone number is

(703) 305-9600.

sc
Patent Examiner.
August 13, 2003.